

Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Bear Creek

Water Body Segment at a Glance:

County: Adair
Nearby Cities: Kirksville and Millard
Length of impaired segment: 2 miles
Pollutant: Unknown
Source: Unknown
Water Body ID: 0115U-01 (Unclassified)



State map showing location of watershed

Scheduled for TMDL development: Established by U.S. EPA December 23, 2010

Description of the Problem

Designated beneficial uses of Bear Creek

- The affected portion of Bear Creek is not classified, so no beneficial uses have been designated. However, all water bodies in Missouri are protected by the general, or narrative, criteria contained in Missouri's Water Quality Standards at (WQS), 10 CSR 20-7.031(3).

Use that is impaired

- None, since no beneficial uses have been designated.

Standards that apply

Because Bear Creek is an unclassified stream and has been listed as impaired for unknown pollutants, no identifiable numeric criteria apply. However, all Missouri Streams are protected by the general criteria contained in Missouri's Water Quality Standards at 10 CSR 20-7.31(3). The particular criteria that apply to Bear Creek state:

(D) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life.

(G) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community.

Background information and water quality data

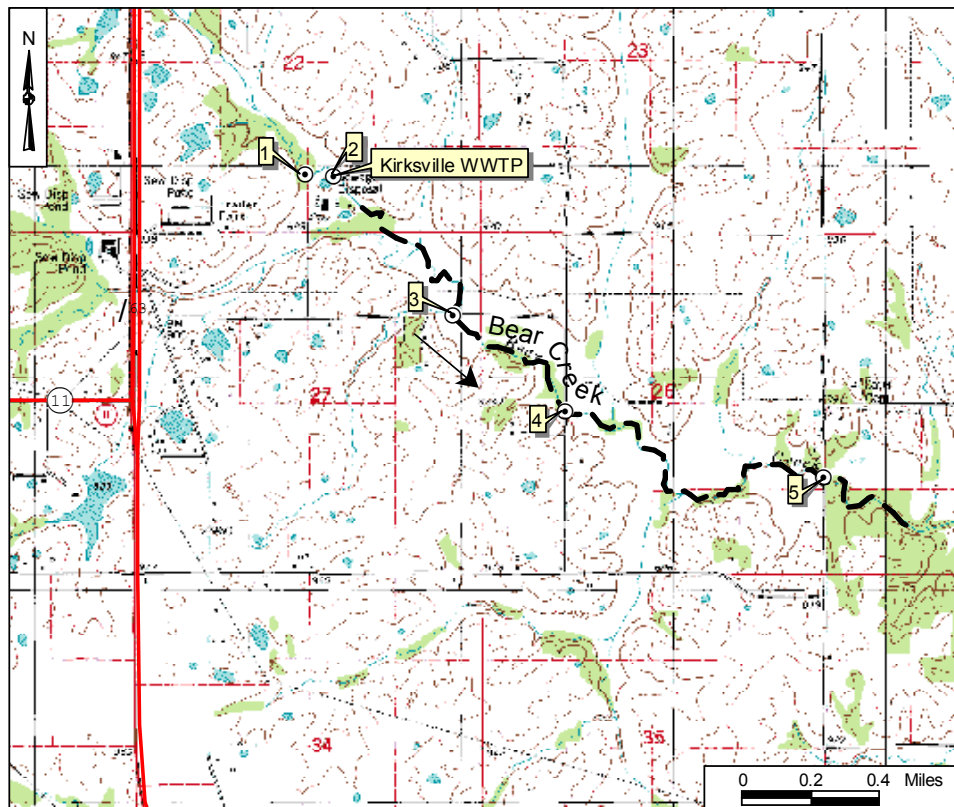
Bear Creek is impaired due to violations of Missouri's general water quality criteria that address protection of aquatic life and biological aquatic communities (10 CSR 20-7.031(3)). In 2001, a

fishery study conducted by the Missouri Department of Conservation in Bear Creek and North Fork Salt River (a Bear Creek reference reach) found reduced numbers of riffle fish species in Bear Creek downstream of the Kirksville Wastewater Treatment Plant. This finding prompted the department to include Bear Creek on the 2002 Missouri 303(d) List of impaired waters.

In addition, historic water quality data collected in August 1978, August 1995 and August 2002 show dissolved oxygen concentrations below 5 milligrams per liter (mg/L) in 18 of 36 samples collected at various locations. The water quality criterion for all classified Missouri streams, except cold water fisheries, requires a daily minimum of 5 mg/L of dissolved oxygen (10 CSR 20-7.031, Table A). Although Bear Creek is a warm water stream, it is not a classified water body and has not been assigned a designated use of protection of warm-water aquatic life. However, the 5 mg/L minimum criterion represents an appropriate threshold by which aquatic health can be evaluated.

Bear Creek is currently on the 2008 303(d) List as impaired by unknown pollutants. In order to address the assessed impairment in Bear Creek, a TMDL has been developed that will target load reductions of nutrients, sediment and biochemical oxygen demand. The Bear Creek TMDL was established by EPA on December 23, 2010.

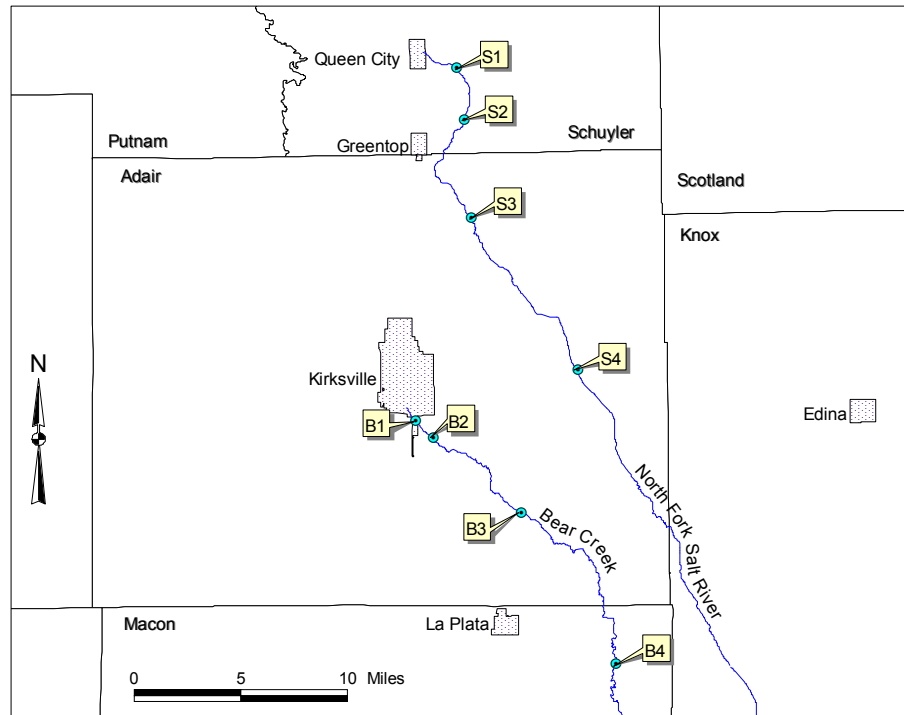
Impaired segment of Bear Creek in Adair County, Mo., with water quality sampling sites



Sampling Site Descriptions

- 1 – Bear Creek 0.1 mile upstream of Kirksville WWTP
- 2 – Kirksville WWTP outfall
- 3 – Bear Creek 0.7 mile downstream of Kirksville WWTP
- 4 – Bear Creek 1.1 mile downstream of Kirksville WWTP
- 5 – Bear Creek 2.1 miles downstream of Kirksville WWTP

Sampling sites for 2001 Missouri Department of Conservation fish study



Sampling Site Descriptions

B1 – Bear Creek 1.5 miles upstream of Kirksville WWTP
 B2 – Bear Creek 0.2 mile downstream of Kirksville WWTP
 B3 – Bear Creek 9.5 miles downstream of Kirksville WWTP
 B4 – Bear Creek 20 miles downstream of Kirksville WWTP

S1 – North Fork of Salt River 1.6 miles downstream of Queen City
 S2 – North Fork of Salt River 4.5 miles downstream of Queen City
 S3 – North Fork of Salt River 10.7 miles downstream of Queen City
 S4 – North Fork of Salt River 20.4 miles downstream of Queen City

Number of Species of Fish Collected in Two Streams in Adair County, Mo., 2001			
Bear Cr. Site	No. of Species	N. Fk. Salt Site	No. of Species
B1	9	S1	1
B2	1	S2	9
B3	11	S3	12
B4	12	S4	17

For more information call or write:

Missouri Department of Natural Resources

Water Protection Program

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